

VDV CURRICULUM FOR TRAINEE

MASTER DOCUMENT

1. Safety, First Aid/CPR
 - 1 First Aid/CPR
 - 2 OSHA 10
 - 3 Key Factors involved with safe work practices
 - 4 Proper Use and Care of Ladders
 - 5 Reality of Electrical Shock
 - 6 Caution – Overhead Work in Progress
 - 7 Hoisting Loads Properly
 - 8 Hazards Created by Poor Housekeeping on the Job
 - 9 Maintain Safe Work Area and Tools
 - 10 Respect and Obey Job Safety Rules
 - 11 Substance Abuse
 - 12 Business Practices and Ethics
2. DC Theory
 - 1 Electricity
 - 2 Ohm's Law
 - 3 Voltage, Resistance, Current, and Power
 - 4 Series Circuits
 - 5 Parallel Circuits
 - 6 Combination Circuits
 - 7 Voltage Dividers
 - 8 Voltage Drop
 - 9 Kirchhoff's Laws
3. AC Theory
 - 1 Sine Waves
 - 2 Resistive Circuits
 - 3 Inductance
 - 4 Inductive Reactance
 - 5 Capacitance
 - 6 Capacitive Reactance
 - 7 Impedance
 - 8 Resonance
 - 9 Series Circuits
 - 10 Parallel Circuits
 - 11 Combination Circuits
 - 12 Filters
 - 13 Power Factor
4. Codes, Standards, Installation Practices
 - 1 Purpose and Intent of Electrical Codes
 - 2 Scope of NFPA/NEC and Local Codes

- 3 Introduction to the National Electrical Code
 - 4 Mandatory Rules
 - 5 Neat and Workmanlike
 - 6 Wet, Damp, and Dry Locations
 - 7 Permissible Loads on Various Circuits
 - 8 Allowable Raceway and Cable Tray Fills
 - 9 Hazardous Locations by Class
 - 10 Wire Properties
 - 11 Conductor Insulation
 - 12 The National Code Process
 - 13 Wiring Devices
 - 14 Wiring Methods
 - 15 Remote Control, Signaling, and Power-Limited Circuits
 - 16 Optical Fiber Cables
 - 17 Communications Circuits
5. Blueprints
 - 1 Drawing Fundamentals
 - 2 How to make proper sketches
 - 3 Architectural Views
 - 4 Blueprint Scales
 - 5 Electrical and mechanical symbols
 - 6 Job costs and takeoffs
 - 7 Specifications
 - 8 Bid Drawings
 - 9 Schematics, Line Drawings, Ladder Diagrams
 - 10 Approved for Construction
 - 11 As-Built
6. Conductors – Wire and Cable
 - 1 Types of Conductors, Wire, and Cable
 1. Copper and Fiber
 2. Hybrid
 3. Coaxial
 4. Shielded and Unshielded
 5. High Pair Count
 6. Splice Closures
 - 2 Effect of Heat
 - 3 Sizing
 1. American Wire Gauge Chart
 - 4 Fire Rating
 - 5 Effects of Soil Conditions on Underground Cable
 - 6 Installation Methods
 - 7 Termination Techniques
 - 8 Cable Supporting Structures
 - 9 Backbone Cable Pathways
 - 10 Horizontal Cable Pathways
 - 11 Fire Stopping
7. Audio Visual Systems
 - 1 Design and Planning

- 2 Rough-in
- 3 Telecommunications Concepts
- 4 Networking Technologies
- 5 Audio Fundamentals
- 6 Video Fundamentals
- 7 Sound Reproduction Devices
- 8 Video Display Technologies
- 9 Home Theater Systems
- 10 Distributed Audio and Video
- 11 Controllers and Interfaces
- 12 Cabling Standards
- 13 Trim-out and Testing
- 8. Closed Circuit Television
 - 1 Video Security Technology
 - 2 Lenses, Optics, and Lighting Characteristics
 - 3 Signal Transmission
 - 4 Monitors and Digital Displays
 - 5 Analog and Digital Recorders
 - 6 Switchers, Quads, and Multiplexers
 - 7 Cameras, Housings and Accessories
 - 8 Pan/Tilt Mechanisms
 - 9 Power Sources
- 9. Fiber Optics
 - 1 Fiber Optics Overview
 - 2 Fiber Optical Cables
 - 3 Minimum Bend Radius
 - 4 Pulling Techniques
 - 5 Fiber Optic Connections
 - 6 Installation Practices
 - 7 Standards Overview
 - 8 Optical Transmitters and Receivers
 - 9 Link Loss Budget
 - 10 Work Area Outlets and Cable Management
 - 11 Outside Plant and Entrance Facility Installations
 - 12 Testing and Certification
- 10. Grounding & Bonding
 - 1 Grounding and Bonding Fundamentals
 - 2 NEC System Grounding
 - 3 Bonding Enclosures and Equipment
- 11. Network Systems
 - 1 Network Definitions
 - 2 Ethernet Basics
 - 3 The OSI Model
 - 4 The Networked PC
 - 5 The Need for Security, Viruses, and Malware
 - 6 Peer-to-Peer Vs. Client/Server
 - 7 Network Operating Systems
 - 8 Network Interface Cards and LAN Devices

- 9 Switches, Routers, and Network Attached Storage
- 10 TCP/IP
- 11 Legacy Protocols
- 12 Dial-Up
- 13 Broadband Access
- 14 Wide Area Networks
- 15 Wireless LANs
- 12. MATV/CATV/SATV
 - 1 Distributed Television Fundamentals
 - 2 Design and Layout
 - 3 Calculating Signal Loss
 - 4 Balancing the System
 - 5 Testing
- 13. Master Clock Systems
 - 1 Master Clock System Fundamentals
 - 2 Master Clock Functions
 - 3 System Devices
 - 4 Correction Types
 - 1. Synchronous
 - a. Hard Wired
 - b. Electronic
 - 2. Hourly
 - 3. 12 Hour
 - 5 Design and Layout
 - 6 Testing
- 14. Nurse Call Systems
 - 1 Nurse Call Fundamentals
 - 2 Nurse Call System Components
 - 3 Ancillary Systems
 - 4 System Design and Planning
 - 5 Installation, Testing, and Troubleshooting
 - 6 Future Expansion Considerations
- 15. Paging and Alert Systems
 - 1 Introduction to Distributed Sound/Paging Systems
 - 2 Constant Voltage and Self-Amplified Systems
 - 3 Mixers, Amplifiers, and Interface Devices
 - 4 Telephone Interface Devices, Zoned Paging and VoIP Systems
 - 5 Speakers, Horns and Installation Techniques
 - 6 Design and Layout
 - 7 Sound Masking Systems
- 16. Power Quality
 - 1 Understanding Power Distribution
 - 2 Power Quality Terminology, Concepts, and Costs
 - 3 Types of Power Problems
 - 4 Harmonics
- 17. RF Communications
 - 1 Signal Characteristics and Signal Power
 - 2 Logarithmic Power Ratios

- 3 Power/Frequency Applications
- 4 Filters
- 5 Waveforms and Harmonics
- 6 Radio Propagation
- 7 Transmission
- 8 Antennas
- 18. Security and Access Control Systems
 - 1 Terms and Definitions
 - 2 Introduction To Security systems
 - 3 Magnetic Contacts
 - 4 Motion Sensors
 - 5 Glass-break Sensors
 - 6 Control Panels, Keypads and Modules
 - 7 System Design and Layout
 - 8 Building Access Control
 - 9 Cards, Codes, and Biometrics
 - 10 Doors, Gates, Turnstiles, and Electric Locks
 - 11 Sensor Technology
 - 12 Computers and Communications
 - 13 System Design
 - 14 Various Types of Areas and Methods to Protect Them
- 19. Semiconductors
 - 1 Semiconductor Technology
 - 2 Diodes
 - 3 Rectifiers
 - 4 Power Supplies
 - 5 Transistors
 - 6 Amplifiers
 - 7 Oscillators
 - 8 Timers
 - 9 SCRs, DIACs, TRIACs
 - 10 Photoconductive Cells
 - 11 Photo resistors
 - 12 Optoelectronics
- 20. Sound Reinforcement Systems
 - 1 Sound Fundamentals and Characteristics
 - 2 Measurements
 - 3 Block Diagrams
 - 4 Specifications
 - 5 Microphones
 - 6 Preamplifiers, Amplifiers, Mixers, and Mixing Consoles
 - 7 Loudspeakers
 - 8 Signal Processing
 - 9 Cabling
 - 10 Test Equipment
- 21. Structured Cabling
 - 1 Safety Codes
 - 2 EIA/TIA Standards

- 3 System Performance
- 4 Unshielded and Shielded Twisted Pair Cables
- 5 Minimum Bend Radius
- 6 Pulling Techniques
- 7 Connecting Hardware
- 8 Pathways and Spaces
- 9 Work Area Outlets and Cable Management
- 10 Telecommunications Cabling Administration
 - 1. Proper Labeling Techniques
- 11 Grounding and Bonding
- 12 Outside Plant and Entrance Facility Installations
- 13 Test and Certification
- 22. Telephony
 - 1 Definitions
 - 2 Telephone Systems and Telephone Circuitry Overview
 - 3 Analog Vs. Digital Signals
 - 4 Electronic Key Systems
 - 5 PBX Telephone Systems
 - 6 Components
 - 7 Installation Requirements
 - 8 Troubleshooting